

No. 18.— *The Land Mammals of Newfoundland.*

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THE great island of Newfoundland lying close under the eastern corner of the Labrador peninsula is a region where the unlooked for is often found. One without previous knowledge of its biota would expect to find there all the plants and animals of the neighboring mainland, and these only slightly differentiated. Such, however, is not the case and the mammalian fauna is more remarkable for the species that are lacking than for the highly differentiated ones that it contains. The island is situated too far north to have a large resident ornithology, still many of the non migratory birds found there have become different and one by one have been separated by name from their mainland representatives. Its flora is even more remarkable and contains a number of southern, pine-barren or sand-plain types not found on the adjacent mainland.

The means by which Newfoundland has acquired its biota have been studied in the most thorough manner by the distinguished botanist, Prof. M. L. Fernald whose paper on the subject, *Rhodora*, July, 1911, **13**, p. 109–162, should be read with care by all interested in the distribution of life in North America.

The island attracted my attention in the early days of my work on North American mammals — it was a virgin field — and the services of Mr. Ernest Doane were secured to make collections there. During the two or three years that Mr. Doane was sending me specimens, I described the different species peculiar to the island in short papers always having in mind an extended account of the mammals for publication at some future time. This project I have now abandoned, but trust that the following notes, discussions of the different species, and nominal list of all known to occur may be useful to one who may undertake a monograph of the biota of Newfoundland, one of the larger islands of the world.

The following notes are based upon exceptionally fine material, except in the case of the bear and of the wolf. Besides the large series of specimens collected by Mr. Doane the Museum of Comparative Zoölogy has numerous skulls of the larger mammals, sent many years ago by Mr. S. M. Nelson, and a series of five Black bear skulls procured by Dr. John C. Phillips during one of his expeditions.

At present, it is idle to speculate whence Newfoundland derived its meagre mammalian fauna. Two facts, however, are perfectly clear:—1st, that there has been no land connection between the island and the Labrador peninsula; and 2nd, that most of the indigenous mammals of Newfoundland have been there for an enormously long space of time. The first being proved by the array of genera, common in the opposite mainland, unrepresented in Newfoundland; and the second by the marked characters, cranial and otherwise, shown by most of the island species.

The following sixteen genera (and subgenera used here in the same sense) are found in the Labrador peninsula and are unknown in Newfoundland:—*Condylura*; *Sorex*; *Gulo*; *Lutreola*; *Mephitis*; *Peromyscus*; *Mictomys*; *Dicrostonyx*; *Phenacomys*; *Evotomys*; *Zapus*; *Napaeozapus*; *Erethizon*; *Marmota*; *Tamiasciurus*; *Sciuropterus*.

Full references to the names here used can be found in the List of North American land mammals in the United States national museum, 1911. By Gerrit S. Miller, Jr. Bull. 79, U. S. nat. mus., 1912.

THE INDIGENOUS MAMMALS OF NEWFOUNDLAND.

The Black bear is not uncommon in the island, and in view of the differences the other indigenous species show, will probably prove to be an insular form. Our series of six skulls is wholly inadequate, five of them are females, and the sixth is young. Individual variation is very great in the Black bear, and a long series of skulls of old males is necessary before it can be determined whether the Newfoundland animal is separable from the mainland form.

The Wolf is now exceedingly rare in Newfoundland and I have never seen a specimen. One was killed during the time Doane was collecting, but he was unable to procure it. Another was shot about two years ago, which Dr. Phillips hoped he had secured, but in some unaccountable way it was lost to us. All who have seen the animal in life report it as being a pale colored wolf. What it is remains for some one fortunate enough to get a specimen to decide.

The Newfoundland red fox, *Vulpes deletrix* Bangs, is a well differentiated island species, very pale and yellowish in color, and with very large hind feet and claws. It is common.

The Newfoundland marten, *Martes atrata* (Bangs) is decidedly a scarce animal and is peculiar to the island. It is a rather small species of very dark colors. In other places, Pine martens appear wholly dependent upon the Red squirrel — their natural prey; I have no knowledge as to what the Marten subsists upon in Newfoundland where there *are no squirrels*. It would hardly seem possible that it could secure enough birds, or that it could catch the Vole as of course the Weasel does. The fur of the Newfoundland marten is of very fine quality and beautiful in color.

The Newfoundland weasel, *Mustela cicognanii mortigena*, sub. sp. nov.

Type, skin and skull no. 3745, ♂ adult, coll. E. A. and O. Bangs. M. C. Z. Bay St. George, Newfoundland, Sept. 27, 1895. Ernest Doane.

Characters: — Similar to *Mustela cicognanii richardsonii* (Bonaparte) of interior Boreal America — Hudson's Bay to Alaska, but color in summer pelage, deeper and richer, less yellowish brown; feet and hands with less white; tail decidedly shorter; skull and teeth similar, I cannot distinguish the skulls of the two subspecies with any certainty, size about the same. From *M. cicognanii cicognanii* Bonaparte of eastern North America, Labrador to New England, the present form differs by its much larger size, more robust skull, and heavier dentition.

Color: — Upper parts rich glossy brown, about Prout's brown. The color is a very difficult one to define by name, on account of the gloss of the fur; it is darker, less yellowish than in *M. cicognanii richardsonii*, and distinctly paler than in *M. cicognanii cicognanii*. Upper lip, and under parts yellowish white; toes, fingers, and inside of legs and arms, white; tail black tipped. *Winter pelage*, wholly yellowish white (sometimes dead white) all over, except black-tipped tail.

Measurements: — *Type*, no. 3745, adult ♂ (not old) total length, 322; tail vertebrae, 93; hind foot, 48. No. 1102 from Codroy Newfoundland old adult ♀, total length, 270; tail vertebrae, 80; hind foot, 34.

Averages of ten adult males from Newfoundland, total length, 329.6; tail vertebrae, 97.9; hind foot, 46.

Averages of four adult males of *M. cicognanii richardsonii* from Mackenzie and Athabasca, total length, 335; tail vertebrae, 104.75; hind foot, 47.

Skull, *Type* adult ♂ (not old), basal length, 45.2; occipitonasal length, 42.4; zygomatic width, 25.; mastoid width, 21.2; interorbital width, 10.4; width across postorbital processes, 12.; least width behind postorbital process, 10.8; length of palate, to end of pterygoid process, 24.8; to palatal notch, 18.; length of single half of mandible, 238.

Remarks:—The Weasel is one of the few Newfoundland mammals that undoubtedly is only a subspecies. Weasels are not at all averse to crossing large sheets of water in winter on the ice. I have heard of their being seen doing this, several times. Mr. W. S. Brooks, an excellent observer, once when standing on the shore of a large frozen lake in Alberta noticed a little object coming toward him like a black feather being blown rapidly across the smooth ice. When it reached shore he found it to be a little white weasel, that had made the passage of the lake on the ice and whose black-tipped tail alone he had seen.

In this connection, I have just been over with the greatest care, an immense series of weasels of the *cicognanii* group including a fine lot of *M. cicognanii richardsonii* some of which are from the actual type locality, kindly loaned by the Bureau of biological survey of Washington. The bulk of the specimens from the Labrador peninsula are referable to true *M. cicognanii* as are all from Lake Edward, Quebec. Some specimens from Black Bay and L'Aure au Loup, Labrador are, however, perfectly intermediate between that form and the Newfoundland weasel, and one young adult male¹ from the former place, is, so far as I can make out quite the same as *M. cicognanii mortigena*. I am therefore rather inclined to believe that there is occasionally an actual interchange of individuals between Newfoundland and the parts of Labrador nearest to it. The Weasel is very common in Newfoundland and preys upon the Vole, which occurs in unlimited numbers.

The Newfoundland otter, *Lutra degener* Bangs, is an exceedingly well characterized island species, differing in many respects, though most of all, in its weak, small skull with very slender zygoma. It is not very common, and of course is peculiar to Newfoundland.

The Newfoundland lynx, *Lynx subsolanus* Bangs was formerly exceedingly scarce, but since the introduction of the American hare

¹ No. 7980 Coll. E. A. & O. Bangs, young adult ♂, skin and skull, Black Bay, Labrador. E. Doane, Sept. 22, 1898. Total length, 336; tail vert. 95; hind foot 42.

has increased extraordinarily and is now abundant all over the island. Its rapid increase during the course of a few years was due solely to an abundance of the food the Lynx likes better than any other. All trappers or hunters in Newfoundland, however, disbelieve this, holding that the lynxes appeared suddenly in great numbers from some adjacent region. Comparison of skins entirely breaks down any such theory, the Newfoundland animal being very dark in color and easily recognized at a glance from continental specimens.

The Newfoundland vole, *Microtus terracnorae* (Bangs), has the distinction of being the only indigenous small mammal of Newfoundland. It is also a fine species, wholly unlike any of the voles of the Labrador peninsula, and, if such resemblances do not deceive us by what Maynard calls the "law of cyclic recession," is more like the vole of the sandy coasts and islands of southeastern Massachusetts, which is a slightly modified form of *M. pennsylvanicus pennsylvanicus* (Ord.) It is abundant throughout the island.

The Newfoundland muskrat, *Fiber*¹ *obscurus* Bangs, is another of the very distinct species, peculiar to the island, differing from all other muskrats in both external and cranial characters. It is very common and found in the island wherever there is water.

The Newfoundland beaver, *Castor caccator*, sp. nov.²

Type, skull no. 6979 adult ♂, Coll. E. A. and O. Bangs, M. C. Z. Near Bay St. George, Newfoundland in 1896. Ernest Doane.

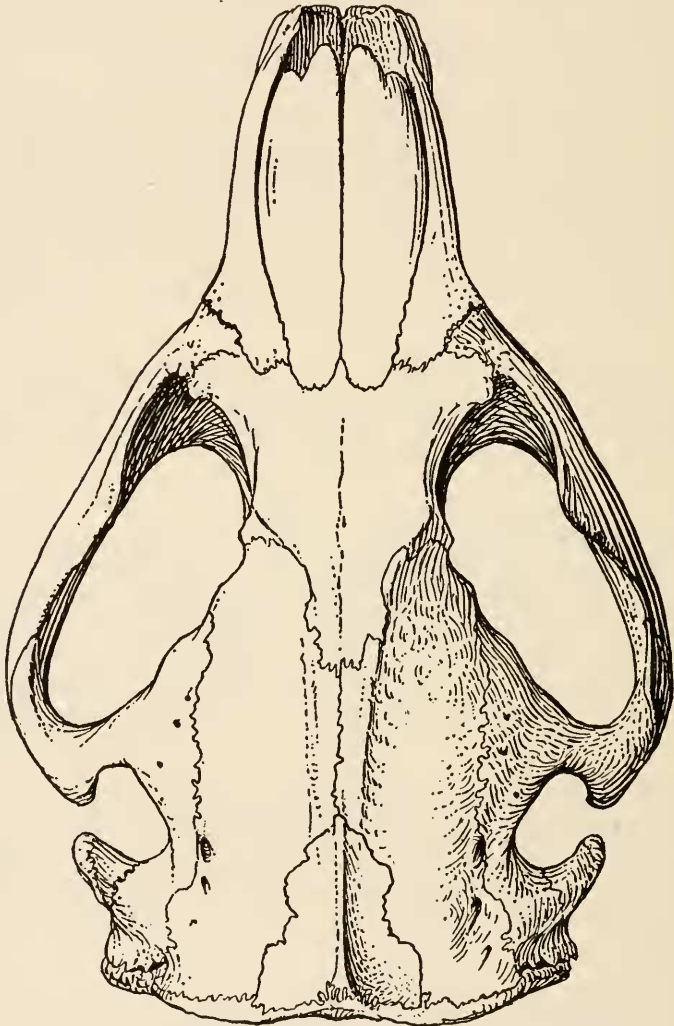
Characters:—Similar to *Castor canadensis* Kuhl, but slightly smaller, and differing in the following marked cranial characters:—interparietal very much wider, more roundish in shape; zygoma much lighter, much less flaring—the outer side of the arch, much straighter, less bowed outward, giving a *much more* triangular appearance to the skull when viewed from above; nasals shorter and wider; dentition about the same. In all skulls I have examined the upper incisors in *C. canadensis* are orange and in *C. caccator* yellow.

Measurements:—Type skull, basal length, 133.4; occipitonasal length, 131.; zygomatic width, 90.4; interorbital width, 24.; length of palate to end of pterygoid, 96.8; to palatal notch, 74.; length of nasals, 47.4; width of nasals, 23.2; length of single half of mandible, 103.

¹ There appears still to be difference of opinion as to whether *Fiber* or *Ondatra* is the generic name of the muskrat. I therefore use the former.

² *Caeco*, to make blind, hence *caccator*, he who stops or obstructs a fountain.

Remarks: — Some years ago, I examined in the flesh two beavers from Newfoundland. There was nothing distinctive in the external appearance of these beaver, though they were rather small, and of exceptionally fine rich color. In cranial characters, however, the



Castor caecator Bangs.

Newfoundland beaver is perfectly distinct, and skulls can be distinguished at once by either of two characteristics — the differently shaped zygoma which give to the skull a triangular appearance, or the very large and very roundish interparietal, both characters showing in young as well as in adult skulls. The nasals are also different in shape. The Newfoundland beaver, though much trapped for its fur, still occurs in fair numbers in the remoter parts of the island.

The Arctic hare, *Lepus arcticus bangsii* Rhoads that occurs in Newfoundland is probably not confined to that island but ranges over the adjacent parts of the Labrador peninsula north to Hamilton Inlet. It is now very rare and local in Newfoundland, occurring only on the tops of some of the higher mountains. Ever since the advent of the American hare the native species has steadily decreased in numbers, and it is now found only in places not frequented by *L. americanus struthopus*.

The Newfoundland caribou, *Rangifer terraenovae* Bangs, is a fine island species peculiar to Newfoundland. It is still common, and can be seen, especially during its migration, in very large bands. I am informed by sportsmen, that during the last decade or so big heads — such as my type — have become rare.

NOMINAL LIST OF THE MAMMALS OF NEWFOUNDLAND.

Myotis lucifugus lucifugus (Le Conte).

Not uncommon in summer.

Ursus americanus americanus Pallas.

Resident, not uncommon.

Thalartos labradorensis Knottnerus-Meyer.

Occasionally reaches the island on ice floes; not resident.

Canis lycaon Schreber.

Now very rare, perhaps nearly extinct in Newfoundland.

Alopex lagopus ungava (Merriam).

Now and then the Arctic fox reaches Newfoundland in the same manner as the Polar bear; not resident.

Vulpes deletrix Bangs.

Peculiar to Newfoundland.

Martes atrata (Bangs).

Peculiar to Newfoundland.

Mustela cicognanii mortigena Bangs.

Newfoundland and adjacent parts of the Labrador peninsula.

Lutra degener Bangs.

Peculiar to Newfoundland.

Lynx subsolanus Bangs.

Peculiar to Newfoundland.

Phoca vitulina Linné.

Very common about the coasts.

Phoca hispida Schreber.

Common along the coasts.

Phoca groenlandica Erxleben.

Common along the coasts.

Erignathus barbatus barbatus (Erxleben).

Not so common as some of the other seals.

Halichoerus grypus (Fabricius).

A rather uncommon seal.

Cystophora cristata (Erxleben).

Not common on the coasts of Newfoundland.

Odobenus rosmarus (Linné).

Formerly the Walrus undoubtedly reached south to Newfoundland, but it is now many years since it occurred there.

Microtus terraenorae (Bangs).

Peculiar to Newfoundland.

Fiber obscurus Bangs.

Peculiar to Newfoundland.

Epimys norregicus (Erxleben).

Introduced and abundant.

Mus musculus musculus Linné.

Introduced; not so abundant as the Rat.

Castor caecator Bangs.

Peculiar to Newfoundland.

Lepus arcticus bangsii Rhoads.

Newfoundland and probably adjacent parts of the Labrador peninsula.

Lepus americanus struthopus Bangs.

Introduced; now very abundant.

Alces americanus Jardine.

Introduced but not successfully naturalized; said still to be found in very small numbers.

Rangifer terraenovae Bangs.

Peculiar to Newfoundland.